CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.07/MP/CEMENT/2014-15

Date: 28.06.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Mr. M. Prakash**, Contractor, Bangalore.
NAME OF THE WORK	:	Improvements to roads and drains in Kashinagara main road in Ward No.07 (Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	:	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
SAMPLE ID	:	CEMENT
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-1989
1	a) Initial Setting Time	IS-4031 (Part -5)	155 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	490 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	1 mm	Not more than 10 mm
3	Standard Consistency	IS-4031 (Part -4)	26.00 %	-

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Job No.: CTCE/BBMP/W.No.07/MP/SAND/2014-15 : 28.06.2014

TEST REPORT ON FINE AGGREGATES (SAND)
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Prakash,** Contractor, Bangalore.

Name of Work : Improvements to roads and drains in Kashinagara main road in Ward No.07 (Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014

Date of Testing : 28.06.2014

Material : Sand Total Wt. of Aggregates in gms 2000

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	99	4.95	4.95	95.1	90-100
2.36	222	11.10	16.05	84.0	75-100
1.18	425	21.25	37.30	62.7	55-90
600 Micron	422	21.10	58.40	41.6	35-59
300 Micron	493	24.65	83.05	17.0	8-30
150 Micron	250	12.50	95.55	4.5	

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Job No.: CTCE/BBMP/W.No.07/MP/AGG/2014-15 : 28.06.2014

TEST REPORT ON COARSE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Prakash,** Contractor, Bangalore.

Name of Work : Improvements to roads and drains in Kashinagara main road in Ward No.07 (Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014

Date of Testing : 28.06.2014

Material : 40mm Aggregates

Total Wt. of Aggregates in gms 25800

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	1015	3.93	3.93	96.07	95-100
20	16725	64.83	68.76	31.24	30-70
10	5090	19.73	88.49	11.51	10-35
4.75	2605	10.10	98.59	1.41	

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Job No.: CTCE/BBMP/W.No.07/MP /STEEL/2014-15 28.06.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. M. Prakash**, Contractor, Bangalore.
Name of the Work	:	Improvements to roads and drains in Kashinagara main road in Ward No.07 (Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Date of Test	:	28.06.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	10	0.62	514	547	13.05	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/MP/STEEL/2014-15 28.06.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. M. Prakash,** Contractor, Bangalore.
Name of the Work	:	Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Date of Test	:	28.06.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	516	559	13.35	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/MP/STEEL/2014-15 28.06.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. M. Prakash,** Contractor, Bangalore.
Name of the Work	:	Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Date of Test	:	28.06.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	16	1.58	521	564	13.60	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/MP/CUBE/2014-15

05.08.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. M. Prakash,** Contractor, Bangalore.
Name of the work	: Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Sample ID	: Culvert Deck Slab Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	08.07.2014	05.08.2014	8.145	477.3	21.21
2	08.07.2014	05.08.2014	8.260	489.3	21.75
3	08.07.2014	05.08.2014	8.310	496.3	22.06

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Job No.: CTCE/BBMP/W.No.07/MP/CUBE/2014-15

07.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Prakash,** Contractor, Bangalore.

Name of the work : Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014

Sample ID : Road Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	10.07.2014	07.08.2014	8.115	480.3	21.35
2	10.07.2014	07.08.2014	8.265	498.3	22.15
3	10.07.2014	07.08.2014	8.332	516.3	22.95

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09.08.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. M. Prakash,** Contractor, Bangalore.
Name of the work	: Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Sample ID	: Road Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	12.07.2014	09.08.2014	8.190	475.6	21.14
2	12.07.2014	09.08.2014	8.256	488.3	21.70
3	12.07.2014	09.08.2014	8.315	499.2	22.19

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Job No.: CTCE/BBMP/W.No.07/MP/CUBE/2014-15

11.08.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. M. Prakash,** Contractor, Bangalore.
Name of the work	: Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Sample ID	: Road Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	14.07.2014	11.08.2014	8.150	475.5	21.13
2	14.07.2014	11.08.2014	8.290	505.5	22.47
3	14.07.2014	11.08.2014	8.310	515.4	22.91

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Job No.: CTCE/BBMP/W.No.07/MP/CUBE/2014-15

12.08.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. M. Prakash,** Contractor, Bangalore.
Name of the work	: Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Sample ID	: Road Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	15.07.2014	12.08.2014	8.198	483.5	21.49
2	15.07.2014	12.08.2014	8.265	506.5	22.51
3	15.07.2014	12.08.2014	8.354	518.3	23.04

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14.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Prakash,** Contractor, Bangalore.

Name of the work : Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014

Sample ID : Road Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	17.07.2014	14.08.2014	8.280	476.8	21.19
2	17.07.2014	14.08.2014	8.310	488.3	21.70
3	17.07.2014	14.08.2014	8.452	510.3	22.68

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Job No.: CTCE/BBMP/W.No.07/MP/CUBE/2014-15

15.08.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. M. Prakash,** Contractor, Bangalore.
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Reference	: AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Sample ID	: Road Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	18.07.2014	15.08.2014	8.115	479.6	21.32
2	18.07.2014	15.08.2014	8.260	516.3	22.95
3	18.07.2014	15.08.2014	8.340	528.6	23.49

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Job No.: CTCE/BBMP/W.No.07/MP/WMM/Gradation/2014-15

03.07.2014

GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Prakash,** Contractor, Bangalore.

Name of Work : Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014

Date of Testing : 03.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **8450**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	190	190	2.2	97.8	95-100
22.4	2680	2870	34.0	66.0	60-80
11.2	1255	4125	48.8	51.2	40-60
4.75	1125	5250	62.1	37.9	25-40
2.36	985	6235	73.8	26.2	15-30
0.600	865	7100	84.0	16.0	8-22
0.075	850	7950	94.1	5.9	0-8

Note:

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03.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Prakash,** Contractor, Bangalore.
Name of the Work	Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	03.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	22.62	22.82	22.72
	100* (W_2/W_1)%			

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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03.07.2014

GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr. M. Prakash,** Contractor, Bangalore.

Name of Work : Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014

Date of Testing : 03.07.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **7835**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	150	150	1.9	98.1	95-100
22.4	2515	2665	34.0	66.0	60-80
11.2	1285	3950	50.4	49.6	40-60
4.75	1050	5000	63.8	36.2	25-40
2.36	980	5980	76.3	23.7	15-30
0.600	855	6835	87.2	12.8	8-22
0.075	650	7485	95.5	4.5	0-8

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Job No.: CTCE/BBMP/W.No.07/MP/WMM/S-T/2014-15 03.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Prakash,** Contractor, Bangalore.
Name of Work	Improvements to roads and drains in Kashinagara main road in Ward No.07(Byatarayanapura) in Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE(KOD.SUB.DIV)/ /2014-15 Dated: 27.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	03.07.2014

Result : Flakiness Index = **11.56%**

Elongation Index = **13.23%**

Result : Combined Flakiness & Elongation index **24.79%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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